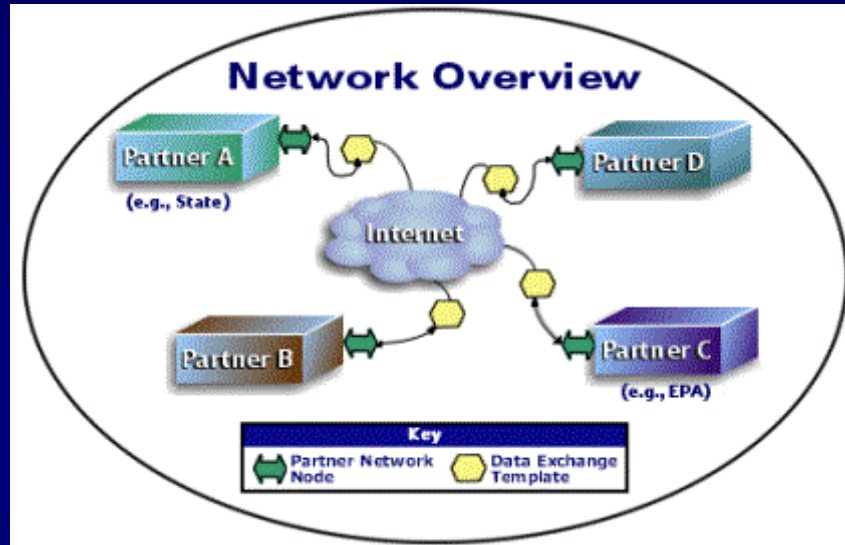# Environmental Information Exchange Network

AQS Conference
Keynote Address
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Environmental Information Trends and Challenges

❖ High demand for public access to environmental information and strong desire amongst partners to share information

❖ Many current program specific approaches to information exchanges are inefficient and are overly burdensome

❖ States are investing in the modernization and integration of information systems and migrating away from primary use of EPA national systems

❖ Use of sophisticated integrated information technologies and approaches is on the rise

❖ Current methods of reporting to EPA are burdensome and compromise data integrity

State-EPA Information Management Partnership

❖ The State-EPA Information Management Workgroup (IMWG) formed in 1998

❖ Prior to the IMWG, States and EPA were not dealing with information management issues in a holistic or systematic manner

❖ IMWG top priorities became:

➢ Using IT to increase the effectiveness of environmental management programs

➢ Using IT to improve public access to environmental information

➢ To share and use information efficiently and effectively

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State-EPA Vision

IMWG prepares "*Shared Expectations of the State-EPA Information Management Workgroup for a National Environmental Information Exchange Network*" *(*June 2000)

Shared Expectations:

- ❖ The Network will revolutionize the management of environmental information

- ❖ The Network will increase efficiencies and improve the quality of environmental data,

- ❖ The Network will provide agencies and the public with ready access to environmental data and increase their ability to employ this information to protect public health and the environment

- ❖ July 2000 – IMWG charters a Network Blueprint Team to prepare the conceptual design for the Network
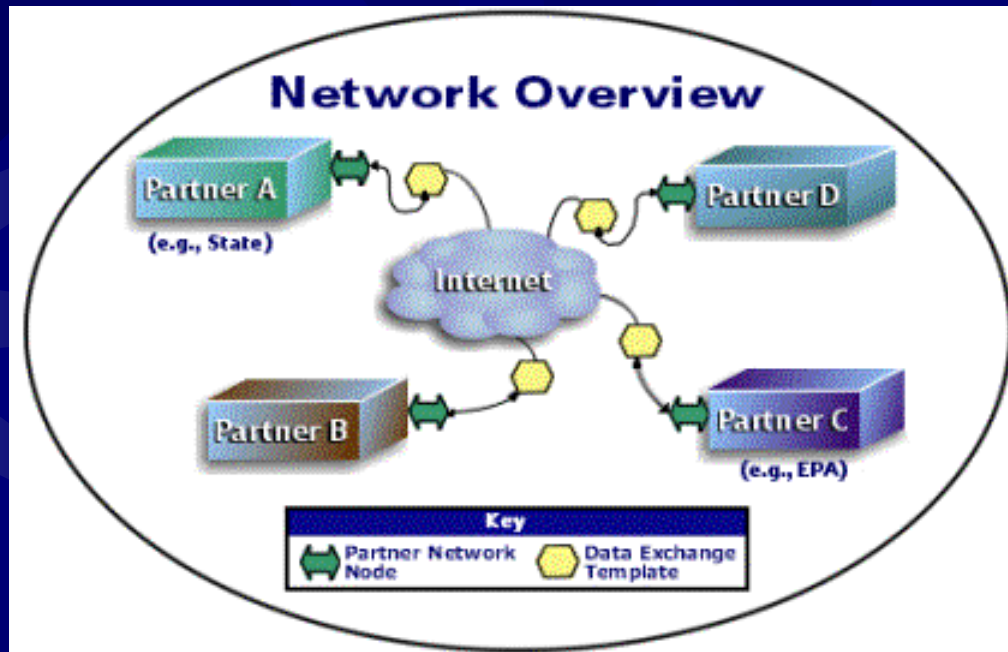
Network Design

Network Design Components

- ❖ Network Design Principles

- ❖ Component 1: Data Standards

- ❖ Component 2: Data Exchange Templates

- ❖ Component 3: Trading Partner Agreements

- ❖ Component 4: Technical Infrastructure & Network Administration

- ❖ Component 5: Member Infrastructure

Network Overview

*An Internet and standards based method for exchanging environmental information between partners!*

Network Design Principles

❖ Desire for an open, dynamic, diverse network of environmental data flows, with an absolute minimum of constraints and overhead on participation

❖ Reliable flows of data that is consistent nationally and that can be readily accessed and integrated

❖ Capacity to fulfill the majority of participants' exchange obligations, whether regulatory, statutory, grant or otherwise

Data and Data Standards

❖ Data standards support the efficient and accurate exchange of data and assist secondary users to understand, interpret and use data appropriately

❖ The National Environmental Data Standards Council (EDSC) will establish data standards as needed by the Network

❖ The Data Standards Council will monitor and act as liaison to other parties creating relevant data

Data Exchange Templates
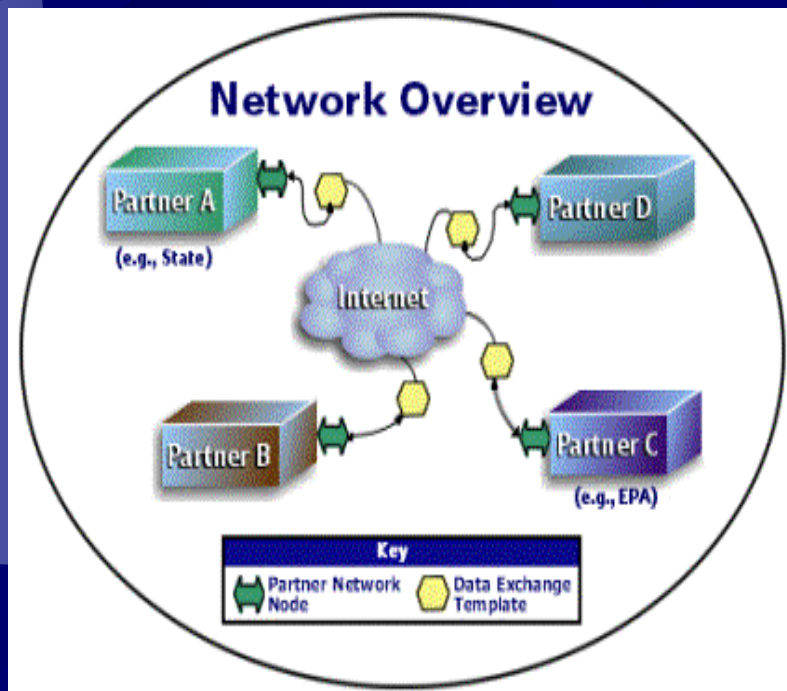
Data Exchange Templates

- ❖ Templates that describe and enforce format of data being exchanged across the Exchange Network
- ❖ Templates consist of XML schema
- ❖ Draw upon data standards

Schema are developed for each exchange type (e.g. Discharge Monitoring Report data)

Trading Partner Agreements

Trading Partner Agreements (TPAs)

❖ TPAs are made between exchange partners (e.g., State and EPA)

❖ Identify data exchange frequency

❖ Identify exact data types/fields exchanged (based on schema)

TRADING PARTNER AGREEMENT

Between the Nebraska Department of Environmental Quality hereinafter referred to as NDEQ and the U.S. Environmental Protection Agency Region VII acting as a representative for the U.S. Environmental Protection Agency and hereinafter referred to as EPA for their participation in sharing data as part of the Facility Identification Integration Activities. The use of the term Agency will refer to both partners.

I. PURPOSE

The purpose of this Trading Partner Agreement (TPA) is to identify the activities that NDEQ and EPA will undertake as partners of the Facility Identification Integration Activities. As partners, each will work cooperatively to implement an exchange of facility identification data pertaining to Nebraska sites/facilities for incorporation into the Nebraska Integrated Information System(IIS) and the EPA Facility Registry System(FRS). Each partner will provide internet access to the data, making it available for use by each partner, businesses, interest groups, and the public in general.

II. BACKGROUND

The partners represent Federal and State Government whose responsibilities in general are for the protection of the environment. As part of their responsibilities, the partners collect and maintain data to support their agency's environmental program interest activities. The consistent identification of facilities within each agency and between agencies is key to the proper use of other data collected by agency environmental programs. It ensures that NDEQ and EPA recognize the same universe of regulated facilities in Nebraska and how these facilities relate to environmental program interests, and their associated data.

Technical Infrastructure

❖ Open standards will be utilized whenever possible to encourage information sharing

❖ Focus on transfer technologies; no significant impact on partner application and database technologies

❖ TCP-IP, HTTP, XML, SOAP, SSL

❖ A given information request may flow over the Network under various security levels

Network Administration

<u>Minimum Functions:</u>

❖ Provision of basic reference information about the Network, its participants and their data

❖ Maintenance of a registry for DETs, transaction protocols, TPA templates, and TPAs

❖ Oversight and Governance

Member Infrastructure

❖Node Administrator

❖Data Steward

❖TPA Administrator

What Kind of Data will flow over the Network?

❖ Current work is focused on existing regulatory Flows (e.g. NEI, FRS etc.)

❖ Demand produced by Partner needs

❖ Partners already expanding beyond these to different kinds of information, from more sources

Network Implementation

The Network Supports Four Basic Operations

❖ **Administering:** Housekeeping

❖ **Querying:** Querying a partner for some data

❖ **Sending:** Send a set of data to a partner

❖ **Retrieving :** Retrieving from a partner a standard set of data

Using the Network

To be "on" the Network you are either a Node, or a consumer.

Exchanges will be:

- ❖ Node-Node (routine, large, secured communications)
- ❖ Consumer-Node (ad-hoc, smaller communications)
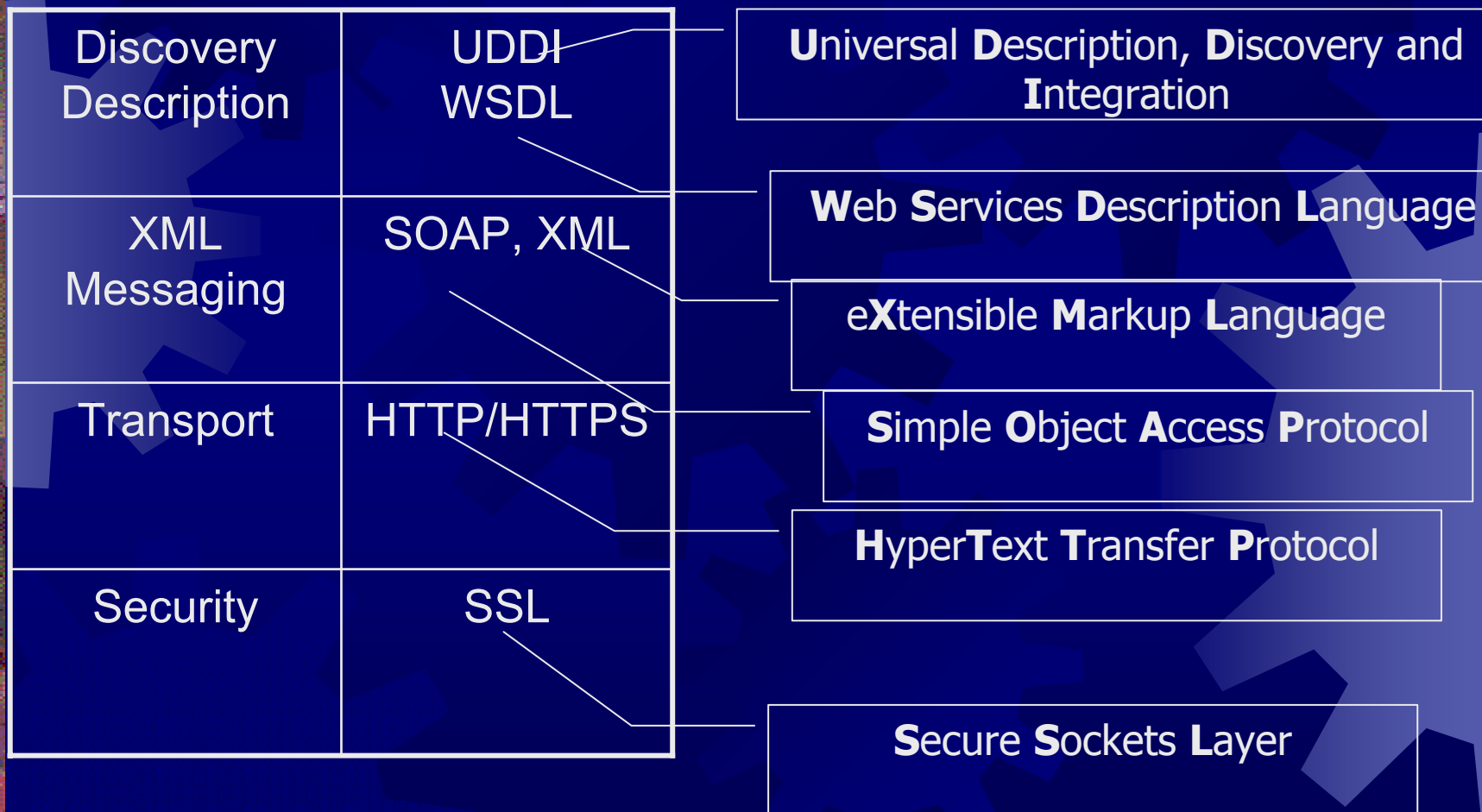
Network Exchange Protocol

The *Protocol* will be the set of rules that govern the generation and use of valid service requests and responses on the National Environmental Information Exchange Network (Network).

Network Node Functional Specification

The ***Specification*** is a detailed description of a Node's expected behavior that includes:

- a description of the functions the Node will perform

- how those functions are to be invoked

- the output expected from the Node

Network Technology Standards

Discovery Description	UDDI WSDL	**U**niversal **D**escription, **D**iscovery and **I**ntegration
XML Messaging	SOAP, XML	**W**eb **S**ervices **D**escription **L**anguage
		e**X**tensible **M**arkup **L**anguage
Transport	HTTP/HTTPS	**S**imple **O**bject **A**ccess **P**rotocol
		Hyper**T**ext **T**ransfer **P**rotocol
Security	SSL	**S**ecure **S**ockets **L**ayer

Why Do I Need to Know About the Protocol & Specification?

If you want to **build a Node**
- The Protocol and Specification define the expected behavior of all Network Nodes

If you want to **send data to a Node**
- The Protocol defines the expected format of all requests and responses from Nodes

If you want to **retrieve data from a Node**
- The Protocol defines the expected format of all requests and responses from Nodes

Network Benefits

- Isolates trading partners from changes in each others systems,

- Platform independent

- Gives agencies more control over their own data, and ability to tailor other's data to their use

- Allows access to more current information

- Sets the stage for the broader exchange of information to include non-regulatory partners

- Delivers timely, reliable, standardized and consistent data between partners

- Enhances potential for data integration

Network Knowledge Transfer

Scheduled Knowledge Transfer Meetings:
- ❖ Philadelphia, Pennsylvania - April 16, 2003
- ❖ Chicago, Illinois – April 22, 2000
- ❖ San Francisco, California – May 5, 2003

Network Challenge Grants

For More Information

http://www.exchangenetwork.net/
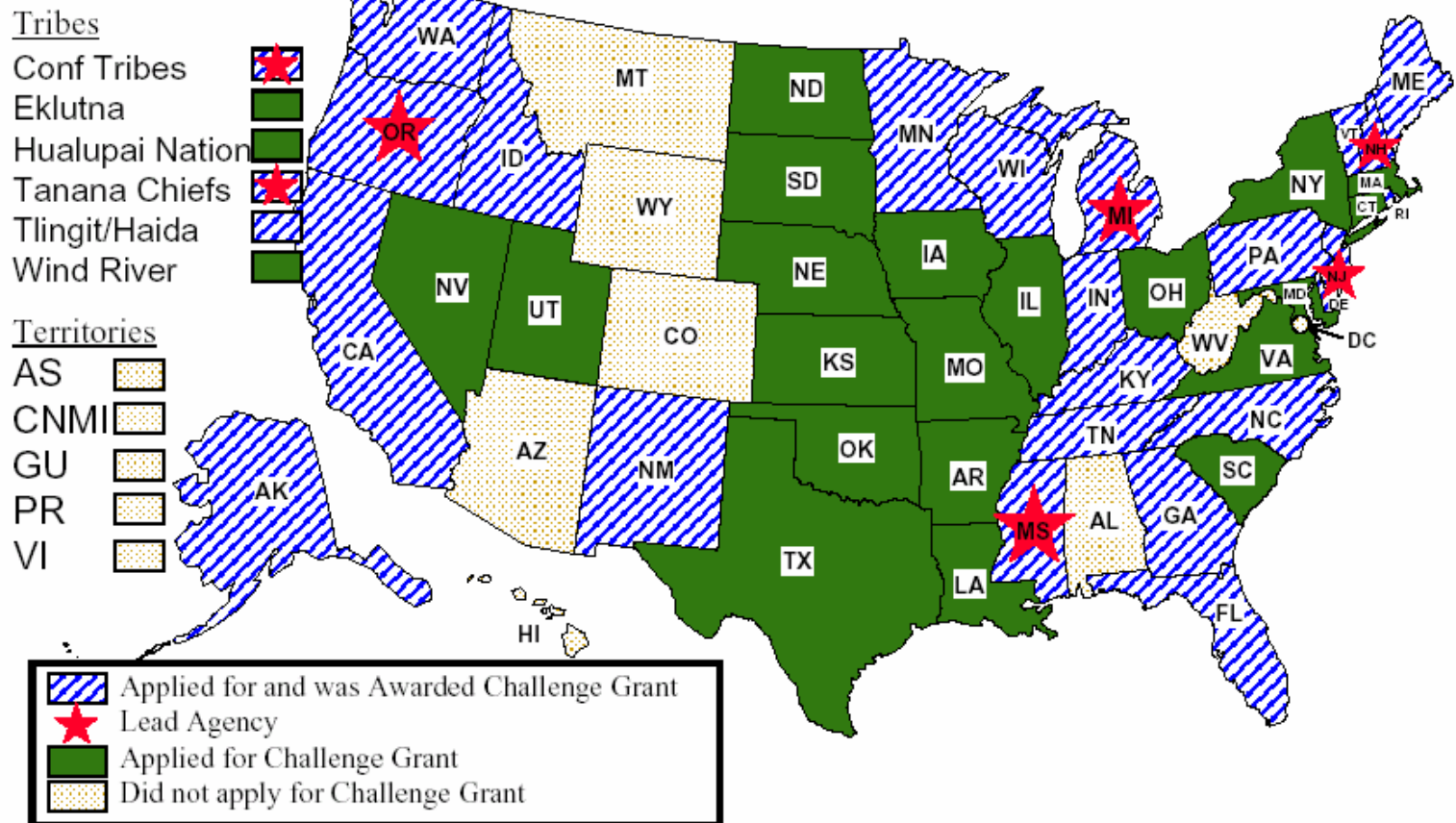
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